

at Port Eads on the 31st, to 31° at San Antonio on the 31st and 32° at Fort Smith on the 23d and 24th.

*Rio Grande valley*: From 32° at Uvalde on the 4th and 6th, to 33° at Eagle Pass on the 7th.

*Ohio valley and Tennessee*: From 21° at Cincinnati on the 16th and 23d, to 32° at Pittsburgh on the 23d.

*Lower lake region*: From 24° at Detroit on the 6th and 22d, at Sandusky on the 24th, to 32° at Oswego on the 16th.

*Upper lake region*: From 20° at Chicago on the 1st, to 29° at Alpena on the 23d and 25th, and at Marquette on the 9th.

*Extreme northwest*: From 30° at Bismarck on the 2d and at Fort Stevenson on the 4th, 23d and 24th, to 33° at Moorhead on the 21st.

*Upper Mississippi valley*: From 21° at La Crosse on the 10th, to 31° at Dubuque on the 22d.

*Missouri valley*: From 27° at Omaha on the 8th, to 36° at Fort Bennett on the 27th.

*Northern slope*: From 32° at Helena on the 13th and 26th, and at North Platte on the 18th, to 48° at Fort Shaw on the 27th.

*Middle slope*: From 21° on the summit of Pike's Peak on the 10th and 27th, to 35° at Dodge City on the 10th.

*Southern slope*: From 26° at Henrietta on the 5th, to 38° at Coleman City on the 6th, and at Stockton on the 4th.

*Southern plateau*: From 28° at Fort Grant on the 18th, to 46° at La Mesilla on the 12th.

*Middle plateau*: From 34° at Pioche on the 10th, to 48° at Winnemucca on the 9th.

*Northern plateau*: From 39° at Lewiston on the 12th, to 51° at Missoula on the 26th and 30th.

*North Pacific coast region*: From 35° at Portland on the 15th, to 45° at Olympia on the 12th.

*Middle Pacific coast region*: From 19° at San Francisco on the 9th, to 36° at Sacramento on the 5th, and 38° at Red Bluff on the 13th.

*South Pacific coast region*: From 15° at San Diego on the 4th, to 34° at Yuma on the 10th, and 39° at Los Angeles on the 4th.

#### FROSTS.

Stations reporting the occurrence of frost are as follows:

Summit of Mount Washington, 2d and 3d.

New Chicago, Montana, 26th.

Cheyenne, Wyoming, 9th: heavy frost. 13th: Ranchmen report the occurrence of a heavy frost at Horse creek, thirty-five miles distant. The temperature at Cheyenne on this date was lower than on the 9th, when a heavy frost occurred.

Fort Washakie, Wyoming, 9th: Killing frost; potatoes very much injured.

Deer Lodge, Montana, 26th: Light frost.

Fort Garland, Colorado, 10th: Severe frost, doing much damage to potatoes.

Pagosa Springs, Colorado, 17th: Heavy frost; 10th, 11th, 16th, 31st, light frosts.

Fort Ellis, Montana, 8th: Heavy frost; 9th, 25th, light frosts.

Carson City, Nevada, 9th.

Neillsville, Wisconsin, 4th, 14th: Light frosts.

Summit of Pike's Peak, 1st, 3d, 4th, 25th: Light frosts; 16th, 22d, heavy frosts.

#### ICE.

Cheyenne, Wyoming, 9th: Ice formed in many places in this city and vicinity.

#### PRECIPITATION.

The distribution of rainfall in the United States and Canada during the month of July, as determined from observations taken at more than six hundred stations, is exhibited on chart number iii.

The table in the lower left-hand corner of the chart shows the average rainfall of July in each district, as determined from Signal Service observations during the past ten years,

and the actual rainfall during the current month, with excess or deficiency, as compared with the average.

There has been an excess of rainfall in the south Atlantic and Gulf states of from 1.41 to 1.95 inches, and in the extreme northwest, where it amounts to 1.56 inches. The largest excess of rainfall, 3.04 inches, has been reported from the southern slope, where unusually heavy monthly rainfalls for that region have occurred.

In the Ohio valley, lower lake region, the upper Mississippi and Missouri valleys deficiencies ranging from 1.11 to 1.74 inches are reported. Deficiencies of 0.98 inch and 0.63 inch occurred in New England and the middle Atlantic states, respectively. At the station on the summit of Mount Washington there was an excess of 2.86 inches, and on the summit of Pike's Peak a deficiency of 3.11 inches was reported.

#### DEVIATIONS FROM AVERAGE PRECIPITATIONS.

Under this heading, departures exhibited by the reports from the regular Signal Service stations are shown in the table of comparative monthly rainfalls (as published in the lower left-hand corner of chart iii). The following items of importance, in connection with this subject, are reported by voluntary observers:

*Illinois*: Riley, monthly rainfall, 3.63 inches, or 0.47 inch below the July average of the past twenty-one years.

*Indiana*: Logansport, monthly rainfall, 3.62 inches, or 0.83 inch less than the average of the past twenty years. During that period, the largest July rainfall, 13.10 inches, occurred in 1869; the smallest, 0.96 inch, occurred in 1863.

*Kansas*: Manhattan, monthly rainfall, 7.73, or 3.02 inches above the July average of the past twenty-two years. Wellington, monthly rainfall, 5.28, or 2.15 inches above the July average of the past three years. The total amount of rainfall for the annual rain period (April to July, inclusive), of 1882 is 19.20, or 4.80 inches more than the average of the past three years. The total rainfall for the seven months ending July 31st is, 20.29, or 5.47 inches more than the average of the same period for the three preceding years.

*Maine*: Gardiner, monthly rainfall, 2.60 inches, or 0.76 inch below the average of the past forty-six years.

*Maryland*: Fallston, monthly rainfall, 3.04 inches, or 0.65 inch below the average of the past eleven years. During that period the largest July rainfall, 5.54 inches, occurred in 1873; the smallest, 1.42 inches, occurred in 1881.

*Massachusetts*: Worcester, monthly rainfall, 1.32, or 2.45 inches below the average. The total amount of rainfall for the seven months ending July 31st is 25.73 inches, or 0.30 inch less than the average of the same period in former years.

*Missouri*: Saint Louis, "Missouri Weather Service" reports monthly rainfall below the average of the past forty-five years.

*New Hampshire*: Antrim, monthly rainfall, 2.60, or 2.17 inches below the July average of the past ten years. Contoocookville, monthly rainfall, 1.65, or 2.35 inches below the average of the past twelve years. Grafton, monthly rainfall, 2.54, or 1.90 inches less than the average of the past three years.

*New York*: Troy, monthly rainfall, 9.62 inches, is more than 3.00 inches above the average of July for the past eight years. North Volney, monthly rainfall, 1.00 inch, or 2.96 inches below the average of the past ten years, and is the smallest July rainfall that has occurred during that period; the largest, 7.80 inches, fell in 1874.

*Pennsylvania*: Dyberry, monthly rainfall, 7.24 inches, is the largest that has occurred since July, 1871, when the amount was 7.68 inches.

*Virginia*: Wytheville, monthly rainfall, 4.63 inches, or 0.33 inch more than the average of a period of seventeen years. The precipitation for the seven months ending July 31st is 6.76 inches in excess of the average.

The following table shows the least and greatest numbers of rainy and cloudy days, and the percentages of mean relative humidity as reported from the various districts during the month:

Table of rainy and cloudy days and relative humidity for July, 1882.

Districts.	Rainy days	Cloudy days.	Relative humidity. *	
	From	To	Percentages.	
New England.....	7 to 24	From 2 to 7	From 65.1 to 80.3.	
Middle Atlantic states.....	8 " 22	" 3 " 8	" 61.9 " 81.3.	
South Atlantic states.....	9 " 23	" 5 " 13	" 62.1 " 83.6.	
Florida peninsula.....	14 " 23	" 4 " 7	" 69.6 " 74.1.	
East Gulf states.....	15 " 23	" 8 " 14	" 73.1 " 80.5.	
West Gulf states.....	8 " 18	" 0 " 11	" 66.1 " 81.0.	
Rio Grande valley.....	3 " 5	" 2 " 9	" 54.8 " 60.8.	
Ohio valley and Tennessee.....	9 " 21	" 3 " 11	" 63.2 " 80.0.	
Lower lake region.....	11 " 15	" 4 " 8	" 62.9 " 72.2.	
Upper lake region.....	9 " 19	" 4 " 9	" 67.9 " 73.0.	
Extreme northwest.....	13 " 17	" 4 " 7	" 68.5 " 79.6.	
Upper Mississippi valley.....	10 " 15	" 4 " 8	" 63.8 " 78.4.	
Missouri valley.....	9 " 10	" 1 " 9	" 66.2 " 73.7.	
Northern slope.....	5 " 11	" 1 " 4	" 44.1 " 67.7.	
Middle slope.....	7 " 25	" 1 " 7	" 40.6 " 72.0.	
Southern slope.....	5 " 14	" 2 " 7	" 44.6 " 71.9.	
Northern plateau.....	1 " 8	" 0 " 6	" 36.7 " 54.8.	
Middle plateau.....	3 " 9	" 0 " 2	" 25.1 " 33.7.	
Southern plateau.....	3 " 18	" 1 " 7	" 41.7 " 58.3.	
North Pacific coast region.....	3 " 9	" 2 " 8	" 57.0 " 66.6.	
Middle Pacific coast region.....	0 " 2	" 0 " 7	" 32.3 " 80.5.	
South Pacific coast region.....	0 " 1	" 0 " 7	" 39.5 " 75.4.	

\* Relative humidity corrected for altitude.

Table of Excessive, Greatest and Least Monthly Rainfalls.

STATION.	SPECIAL HEAVY.			Largest Monthly.	SMALLEST MONTHLY.	
	Date.	Amt.	Duration	Amount, Inches.	STATION.	Amt.
Alabama.		inch.			Arizona.	in's.
State Line.....	18 and 19	3.95		16.37	Casa Grande.....	0.00
Do.....	22	2.80			Maricopa.....	0.00
Mt. Vernon Barracks.....	3 and 4	4.92		14.54	Texas Hill.....	0.00
Do.....	18 and 19	3.44			Wilcox.....	0.11
Scottsborough.....				9.00	Yuma.....	0.20
Mobile.....				9.52	Phoenix.....	0.32
Uniontown.....				9.49	San Simon.....	0.50
Demopolis.....				7.85	California.	
Troy.....				7.84	Alta.....	0.00
Selma.....				6.64	Alcatraz Island.....	0.00
Tusculum.....				6.49	Anaheim.....	0.00
Montgomery.....	11 and 12	4.70		6.29	Angel Island.....	0.00
Decatur.....	3	2.61		6.19	Antioch.....	0.00
Arkansas.					Auburn.....	0.00
Helena.....				7.43	Benetia Barracks.....	0.00
Russellville.....	3	3.40			Berryvale.....	0.00
Canada.					Brentwood.....	0.00
Montreal.....				6.04	Brighton.....	0.00
Dakota.					Borden.....	0.00
Huron.....	29	2.06	2 hrs.		Byron.....	0.00
Delaware.					Caliente.....	0.00
Delaware Breakwater.....	29	2.00	5 hrs.		Calistoga.....	0.00
Florida.					Cisco.....	0.00
Mayport.....	4 and 5	3.03		11.10	Colton.....	0.00
Do.....	8 and 9	3.98			Davis.....	0.00
Live Oak.....				10.98	Delano.....	0.00
Fort Brook, Tampa.....	21	2.30	3hrs. 10m.	10.44	Dunnigan.....	0.00
Cedar Keys.....	3 and 4	3.96		10.33	Emigrant Gap.....	0.00
Do.....	24	3.43	3hrs. 50m.		Fresno.....	0.00
Fort Barrancas.....	3 and 4	3.19		9.22	Galt.....	0.00
Fernandina.....				8.48	Goshen.....	0.00
Waldo.....				7.55	Hollister.....	0.00
Pensacola.....	11	2.33	6hrs. 45m.	7.02	Indio.....	0.00
Key West.....	10	1.40	1hr. 30m.		Ione.....	0.00
Georgia.					Keene.....	0.00
Way Cross.....	21 and 22	3.79		11.37	Kingsburg.....	0.00
Columbus.....				9.02	Lathrop.....	0.00
Thomasville.....	3 and 3	3.50		8.31	Lemoore.....	0.00
Fort Gaines.....				7.41	Livermore.....	0.00
Newnan.....				7.41	Los Angeles.....	0.00
West Point.....				6.80	Mammoth Tank.....	0.00
Smithville.....				6.67	Martinez.....	0.00
Madison.....				6.65	Marysville.....	0.00
Atlanta.....	3	1.80	3hrs. 10m.	6.61	Menlo Park.....	0.00
Gartersville.....	3	2.50		6.48	Merced.....	0.00
Calhoun.....				6.42	Modesto.....	0.00
Indiana.					Mojave.....	0.00
Evansville.....				6.05	Napa.....	0.00
Indian Territory.					Newhall.....	0.00
Fort Supply.....	21	2.66		6.50	Niles.....	0.00
Iowa.					Oakland.....	0.00
Logan.....				7.30	Petaluma.....	0.00
Davenport.....	9	1.17	1hr. 10m.		Point San Jose.....	0.00
Kansas.					Poway.....	0.00
Fort Riley.....	27 and 28	3.84		8.01	Ravenna.....	0.00
Manhattan.....	27, 28, & 29	4.95		7.73	Redding.....	0.00
Clay Centre.....				7.04	Salinas.....	0.00
Holton.....				6.06	San Mateo.....	0.00
Kentucky.					San Francisco.....	0.00
Paducah.....	1	3.61		7.89	San Fernando.....	0.00
Louisiana.					San Diego.....	0.00
Port Eads.....	25 and 26	4.70		13.68	Santa Cruz.....	0.00
Shreveport.....	15	2.83		11.38	San Jose.....	0.00
Cheneyville.....	27	3.15		11.35	Spadra.....	0.00
Amite City.....				11.27	South Valejo.....	0.00
Scranton.....	23	3.06		9.98	Suisun.....	0.00
Waterville.....				8.61	Sumner.....	0.00
Monroe.....				7.66	Stockton.....	0.00
Alexandria.....				7.36	Solidad.....	0.00
Natchitoches.....	16 and 17	3.42		7.02	Tehama.....	0.00

Table of Excessive, Greatest and Least Monthly Rainfalls—Continued.

STATION.	SPECIAL HEAVY.			Largest Monthly.	SMALLEST MONTHLY.	
	Date.	Amt.	Duration	Amount, Inches.	STATION.	Amt.
New Iberia.....				6.99	Tehachapi.....	0.00
New Orleans.....	16	1.30	55 m.	6.84	Tracy.....	0.00
Morgan City.....				6.52	Tulare.....	0.00
Maryland.					Turlock.....	0.00
Baltimore.....	29	1.50	2 hrs.		Whitewater.....	0.00
Massachusetts.					Williams.....	0.00
Milton.....	28	2.00	1 hr.		Willows.....	0.00
Michigan.					Woodland.....	0.00
Fort Brady.....	27	1.20	1hr. 45m.		Red Bluff.....	t'ce
Minnesota.					Sacramento.....	t'ce
Northfield.....	25 and 26	3.12		7.25	Princeton.....	0.01
Mississippi.					Vaughn's Ferry.....	0.02
Lake.....	11 and 12	4.60		14.32	Pleasanton.....	0.04
do.....	22	2.52			Fort Gaston.....	0.06
Brookhaven.....				10.31	Fort Bidwell.....	0.16
Vicksburg.....				10.19	Colorado.	
Edwards.....				10.11	Hermosa.....	0.30
Jackson.....				9.10	Idaho.	
Batesville.....	20 and 21	3.57		8.48	Coeur d'Alene.....	t'ce
Meridian.....	22	3.00		6.72	Lewiston.....	0.29
Macon.....				6.32	Eagle Rock.....	0.30
Starkville.....				6.08	Montana.	
Aberdeen.....				6.02	Terry's Landing.....	0.15
Missouri.					Fort Maginnis.....	0.19
Protem.....	11 and 12	1.80	1hr. 30m.	8.41	Helena.....	0.36
Pierce City.....	21	2.20	6hrs. 21m.	8.20	Nevada.	
Nebraska.					Browns.....	0.00
Clear Creek.....				7.79	Humboldt.....	0.00
Omaha.....				6.76	Tecoma.....	0.00
Fremont.....				6.45	Tono.....	0.00
New Hampshire.					Winnemucca.....	0.01
Mount Washington.....	2	2.71		10.08	Halleck.....	0.03
New Jersey.					Golconda.....	0.06
Paterson.....				7.02	Battle Mountain.....	0.08
New York.					Carson City.....	0.18
Troy.....	28	3.23		9.62	Carlin.....	0.18
White Plains.....	2	2.46	1hr. 35m.	6.12	Beowawe.....	0.20
North Carolina.					Pioche.....	0.21
Kittyhawk.....	13	2.68		15.36	Hot Springs.....	0.36
do.....	19	3.23	5hrs. 25m.		Otago.....	0.44
do.....	20	2.15	2hrs. 19m.		Oregon	
do.....	21	2.48	2hrs. 19m.		Umatilla.....	0.04
Idaho.					Utah.	
Goldsboro.....				9.49	Corinne.....	0.00
Wilmingon.....				8.89	Ogden.....	0.00
Murphy.....				8.20	Promontory.....	0.00
Hatteras.....				7.26	Coalville.....	0.06
Charlottesville.....	30	2.08	3hrs. 15m.		Salt Lake City.....	0.30
Pennsylvania.					Washington.	
Dyberry.....	12	1.51	2 hrs.	7.24	Colfax.....	0.50
do.....	1	2.50	16 hrs.		Wyoming.	
Blooming Grove.....				6.20	Fort Bridger.....	0.32
Erie.....	18	1.42	35 min.			
South Carolina.						
Hardeeville.....	22	2.55		10.62		
Florence.....				10.31		
Cheraw.....	22	3.85		7.44		
Columbia.....				7.04		
Yennassee.....	22	3.80		6.84		
Georges.....				6.32		
Jacksonborough.....	22	3.00				
Tennessee.						
Austin.....				8.40		
Erin.....				6.74		
Milan.....	17	3.20		6.62		
Knoxville.....				6.25		
Harris.....	17	2.48				
Texas.						
Jacksboro.....	29	5.06		10.51		
Graham.....				9.26		
Weatherford.....				7.08		
Paestine.....				7.01		
Dallas.....				6.96		
Coleman City.....	22	2.80	4 hrs.	6.61		
Tyler.....	9	2.80		6.61		
Decatur.....				6.52		
Denison.....				6.32		
Clarkeville.....				6.91		
Eagle Pass.....	10	3.04	3hrs. 30m.			
Fredericksburg.....	19	1.58	1 hr. 30m.			
West Virginia.						
Helvetia.....				7.65		
Wellsburg.....	1	1.00	1 hr.			

\* June 30 and July 1.

## HAIL.

Fort Bennett, Dakota, 14th: Severe hail storm; stones of size of walnuts.

Fort Supply, Indian territory, 4th: Severe hail storm; hail-stones of unusually large size.

Pike's Peak, Colorado, 12th: Heavy hail storm occurred about 4.00 p. m. The hail-stones were one inch in diameter and of a balloon shape, and were very hard. Hail storms were also reported on the 2d, 3d, 23d, and 28th.

Hastings, Nebraska, 11th: Heavy hail storm occurred, causing much damage to crops and fruit gardens, and breaking many windows. The hail-belt extended about a mile west and north of the town, and somewhat farther eastward.

Sterling, Kansas, 15th: A severe hail storm occurred in Rice county, many windows were broken, and crops were damaged. Santa Fé, New Mexico, 14th: At Cerrillos mining camp, about twenty miles from Santa Fé, a heavy hail storm prevailed; windows were broken, and several persons injured. Much damage was done to gardens and crops.

Hail storms of less violence have occurred in the various states and territories, as follows:

*Colorado*: Fort Garland, 14th.

*Dakota*: Fort Lincoln, 2d; Fort Hale, 15th; Fort Meade, 18th; Alexandria, 9th; Fort Stevenson, 17th and 25th; Rapid City, 18th.

*Illinois*: Riley, 13th; Swanwick, 13th.

*Idaho*: Eagle Rock, 21st.

*Kansas*: Wellington, 15th; Yates Centre, 11th.

*Michigan*: Hastings, 4th; Grand Haven, 4th; Port Huron, 18th.

*Missouri*: Pierce City, 3d; Saint Louis, 13th; Saint Joseph, 18th.

*Montana*: Helena, 5th and 16th.

*Nebraska*: Fremont, 27th.

*New Mexico*: Fort Union, 17th and 28th; Fort Bayard, 27th; Santa Fé, 14th and 24th.

*New York*: Menand's road, near Albany, 28th; Albany, 28th.

*Ohio*: Westerville, 5th; Cleveland, 18th.

*Pennsylvania*: Pittsburg, 14th.

*South Carolina*: Columbia, 1st.

*Tennessee*: Nashville, 29th.

*Texas*: Fort McKavett, 19th; Concho, 9th.

*Utah*: Salt Lake City, 21st.

*Wisconsin*: Franklin, 21st.

*Wyoming territory*: Cheyenne, 28th.

#### SNOW.

Snow is reported to have fallen at the following stations during the month:

Summit of Mount Washington, 2d, 3d.

Summit of Pike's Peak, 20th, 24th, 25th, 26th.

Fort Ellis, Montana, 8th.

#### SLEET.

Mount Washington, 3d; Pike's Peak, 8th, 13th to 16th, 22d, 26th, 27th, 29th, 30th.

#### COTTON REGION REPORTS.

The following tables give the average rainfall, mean of maximum and mean of minimum temperatures, for the months of July, June, May, and April, in each of the cotton districts as shown on chart vi. issued with the April REVIEW.

*Meteorological Record for the Cotton Districts for the month of July 1882.*

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	8.80	90.4	71.3
Savannah.....	6.21	91.0	70.3
Charleston.....	7.28	90.9	68.0
Atlanta.....	5.45	87.9	67.6
Wilmington.....	5.90	90.2	67.7
Memphis.....	5.45	88.0	67.1
Galveston.....	3.74	94.0	71.3
Vicksburg.....	10.30	89.4	69.0
Montgomery.....	5.18	88.6	67.1
Augusta.....	4.93	90.0	69.2
Little Rock.....	3.08	89.2	66.0
Mobile.....	6.06	90.5	68.7

*Meteorological Record for the Cotton Districts for the month of June, 1882.*

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	2.43	90.6	72.5
Savannah.....	4.97	89.9	70.4
Charleston.....	4.98	89.9	67.6
Atlanta.....	5.53	88.6	66.8
Wilmington.....	1.97	90.0	66.2
Memphis.....	2.89	90.4	67.0
Galveston.....	0.90	93.7	70.0
Vicksburg.....	1.44	91.2	68.5
Montgomery.....	3.49	91.5	69.4
Augusta.....	4.06	90.5	67.6
Little Rock.....	1.58	91.8	64.2
Mobile.....	3.60	94.8	68.8

*Meteorological Record for the Cotton Districts for the month of May, 1882.*

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	5.57	84.4	61.1
Savannah.....	2.59	84.8	60.7
Charleston.....	2.63	81.9	58.1
Atlanta.....	2.39	78.9	56.2
Wilmington.....	2.52	79.0	54.6
Memphis.....	7.58	77.7	56.3
Galveston.....	5.25	83.9	59.9
Vicksburg.....	7.03	81.9	60.8
Montgomery.....	3.02	81.9	58.2
Augusta.....	2.11	82.2	57.8
Little Rock.....	11.04	78.7	59.6
Mobile.....	4.69	83.4	58.3

*Meteorological Record for the Cotton Districts for the month of April, 1882.*

DISTRICTS.	Average rain-fall in inches.	Mean of the maximum.	Mean of the minimum.
New Orleans.....	5.63	81.9	59.9
Savannah.....	3.73	81.1	60.2
Charleston.....	2.66	77.5	54.5
Atlanta.....	4.49	76.3	54.9
Wilmington.....	3.88	74.2	50.0
Memphis.....	5.29	74.9	54.0
Galveston.....	1.68	82.1	57.9
Vicksburg.....	7.03	78.6	56.8
Montgomery.....	4.92	78.5	57.2
Augusta.....	3.05	78.2	54.7
Little Rock.....	4.74	75.9	51.9
Mobile.....	8.80	79.1	57.3

#### WINDS.

The prevailing winds at Signal Service stations during the month of July, 1882, are shown on chart number ii. by arrows, which fly with the wind.

Throughout the country east of the Rocky mountains the prevailing winds were mostly southerly, except along the coast of New England, where they were westerly, and in the northern and middle slopes, where they were westerly and northwesterly; along the immediate California coast they were westerly; in the southern and middle plateau districts they were from southeast to southwest; in the northern plateau and in the north Pacific coast region they were variable.

#### TOTAL MOVEMENTS OF THE AIR.

The following are the largest total movements of the air at Signal Service stations: Mount Washington, New Hampshire, 25,082 miles; Hatteras, North Carolina, 11,318; San Francisco, California, 9,550; Fort Macon, North Carolina, 9,083; Galveston, Texas, 8,946; Dodge City, Kansas, 8,845; Indianola, Texas, 8,703; Eagle Rock, Idaho, 8,555; Delaware Breakwater, 8,452; Kitty Hawk, North Carolina, 8,437; Sandusky, Ohio, 8,143.

The smallest are: La Mesilla, New Mexico, 1,423; Lynchburg, Virginia, 1,910; Nashville, Tennessee, 2,217; Roseburg, Oregon, 2,258; Olympia, Washington territory, 2,269; Uvalde, Texas, 2,377; Silver City, New Mexico, 2,458; Morgantown, West Virginia, 2,571; Augusta, Georgia, 2,577; Vicksburg, Mississippi, 2,627; Tucson, Arizona, 2,776; Dayton, Washington territory, 2,877; Washington, District of Columbia, 2,903.

#### HIGH WINDS.

The highest velocity reported during the month (92 miles per hour, from the nw.) occurred on the summit of Mount Washington on the 2d. Other days on which high velocities were recorded, at this station, are as follows: 52 miles, s., 1st; 68, nw., 3d; 70, ne., 5th; 64, nw., 6th; 68, nw., 7th; 52, nw., 8th; 62, nw., 9th; 53, w., 10th; 68, nw., 11th; 71, nw., 12th; 70, nw., 13th; 50, w., 17th; 51, nw., 19th; 52, nw., 21st; 52, nw., 22d; 58, nw., 23d; 60, nw., 24th; 56, nw., 25th; 60, nw., 26th; 62, nw., 27th; 52, nw., 28th; 51, nw., 29th.

Velocities of fifty miles per hour, or more, were also reported from the following stations: Little Rock, Arkansas, 54, n., 4th; Fort Bennett, Dakota, 52, nw., 15th; Fort Stevenson, Dakota, 50, se., 24th.

#### LOCAL STORMS.

*Arkansas*: 3d, a tornado occurred in Crawford county, caus-